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Division of Solid & Hazardous Waste

Utah Department of Environmental Quality

Utah Class II Landfill Permit Application Form

Part I General Information APPLICANT: PLEASE COMPLETE ALL SECTIONS.					
I. Landfill Type	☒ Class II	**II. Application Type**	☐ New Application ☒ Renewal Application	☐ Facility Expansion ☐ Modification	
For Renewal Applications, Facility Expansion Applications and Modifications Enter Current Permit Number ____					
III. Facility Name and Location					
Legal Name of Facility: Kanab Sanitary Landfill					
Site Address (street or directions to site): Four miles S/E of Kanab, Utah				County: Kane	
City: Kanab	State: UT	Zip Code: 84741	Telephone		
Township: 44S	Range: 6W	Section(s): 11	Quarter/Quarter Section: NW ¼	Quarter Section: NE ¼	
Main Gate Latitude: degrees minutes seconds		Longitude: degrees minutes seconds			
IV. Facility Owner(s) Information					
Legal Name of Facility Owner: Western Kane County Special Service District No. 1					
Address (mailing): P.O. Box 36					
City: Kanab	State: UT	Zip Code: 84741	Telephone: (435)644-5089		
V. Facility Operator(s) Information					
Legal Name of Facility Operator: Same					
Address (mailing):					
City	State	Zip Code	Telephone		
VI. Property Owner(s) Information					
Legal Name of Property Owner: Same					
Address (mailing):					
City	State	Zip Code	Telephone		
VII. Contact Information					
Owner Contact: Nyle W. Willis		Title: Treasurer			
Address (mailing): 28 N. Main St.					
City: Kanab	State: UT	Zip Code: 84741	Telephone: (435)644-5089		
Email Address: NWW@KANAB.NET		Alternative Telephone (cell or other)			
Operator Contact: Same		Title			
Address (mailing):					
City	State	Zip Code	Telephone		
Email Address		Alternative Telephone (cell or other)			
Property Owner Contact: Same		Title			
Address (mailing):					
City	State	Zip Code	Telephone		
Email Address		Alternative Telephone (cell or other)			

Utah Class II Landfill Permit Application Form

Part I General Information (continued)

VIII. Waste Types (check all that apply)

Waste Type	Combined Disposal Unit	Monofill Unit
☒ Municipal Waste	☐	☐
☐ Construction & Demolition	☐	☐
☐ Industrial	☐	☐
☐ Incinerator Ash	☐	☐
☐ Animals	☐	☐
☐ Asbestos	☐	☐
☐ PCB's (R315-315-7(3) only)	☐	☐
☐ Other _____	☐	☐

IX. Facility Area

Facility Area	227	acres
Disposal Area	20	acres
Design Capacity		
Years	50	
Cubic Yards		
Tons		

X. Fee and Application Documents

Indicate Documents Attached To This Application ☐ Application Fee: Amount $

☒ Facility Map or Maps	☒ Facility Legal Description	☒ Plan of Operation	☒ Waste Description
☒ Ground Water Report	☒ Closure Design	☒ Cost Estimates	☒ Financial Assurance

I HEREBY CERTIFY THAT THIS INFORMATION AND ALL ATTACHED PAGES ARE CORRECT AND COMPLETE.

Signature of Authorized Owner Representative Name typed or printed Nyle W. Wells	Title: TREASURER Address: 28 NORTH MAIN, KANAB, UT 84741	Date: 08/26/2003
Signature of Authorized Land Owner Representative (if applicable) Name typed or printed	Title Address	Date
Signature of Authorized Operator Representative (if applicable) Name typed or printed	Title Address	Date

Utah Class II Landfill Permit Application Checklist

Important Note: The following checklist is for the permit application and addresses only the requirements of the Division of Solid and Hazardous Waste. Other federal, state, or local agencies may have requirements that the facility must meet. The applicant is responsible to be informed of, and meet, any applicable requirements. Examples of these requirements may include obtaining a conditional use permit, a business license, or a storm water permit. The applicant is reminded that obtaining a permit under the *Solid Waste Permitting and Management Rules* does not exempt the facility from these other requirements.

An application for a permit to construct and operate a landfill is the documentation that the landfill will be located, designed, constructed, and operated to meet the requirements of Rules R315-302, R315-303, R315-308, R315-309, and R315-315 of the *Utah Solid Waste Permitting and Management Rules* and the *Utah Solid and Hazardous Waste Act* (UCA 19-6-101 through 123). The application should be written to be understandable by regulatory agencies, landfill operators, and the general public. The application should also be written so that the landfill operator, after reading it, will be able to operate the landfill according to the requirements with a minimum of additional training.

Copies of the *Solid Waste Permitting and Management Rules*, the *Utah Solid and Hazardous Waste Act*, along with many other useful guidance documents can be obtained by contacting the Division of Solid and Hazardous Waste at 801-538-6170. Most of these documents are available on the Division's web page at www.hazardouswaste.utah.gov. Guidance documents can be found at the solid waste section portion of the web page.

When the application is determined to be complete, the original complete application and one copy of the complete application are required along with an electronic copy.

Part II **Application Checklist**

***I.* Facility General Information**	
Description of Item	Location In Document
Completed Part I General information	Attached
General description of the facility (R315-310-3(1)(b))	Page 2
Legal description of property (R315-310-3(1)(c))	Page 2
Proof of ownership, lease agreement, or other mechanism (R315-310-3(1)(c))	Exhibit 2b
Area served by the facility including population (R315-310-3(1)(d))	Exhibit 3
A demonstration that the landfill is not a commercial facility	N/A
Waste type and anticipated daily volume (R315-310-3(1)(d))	Page 3
Intended schedule of construction (R315-302-2(2)(a))	Page 18
Demonstration That The Facility Meets The Location Standards (R315-302-1)	
Land use compatibility	
Maps showing the existing land use, topography, residences, parks, monuments, recreation areas or wilderness areas within 1000 feet of the site boundary	Exhibit 10
Certifications that no ecologically or scientifically significant areas or endangered species are present in site area	N/A
List of airports within five miles of facility and distance to each	Kanab 2½ mi Exhibit 11

Utah Class II Landfill Permit Application Checklist

I. Facility General Information	
Description of Item	Location In Document
Geology	
Geologic maps showing significant geologic features, faults, and unstable areas	Exhibit 12
Maps showing site soils	Exhibit 12, Page 7
Surface water	
Magnitude of 24 hour 25 year and 100 year storm events	
Average annual rainfall	Page 6
Maximum elevation of flood waters proximate to the facility	N/A
Maximum elevation of flood water from 100 year flood for waters proximate to the facility	N/A
Wetlands	N/A
Ground water	Page 7
Plan of operations (R315-310-3(1)(e) and R315-302-2(2))	
Description of on-site waste handling procedures and an example of the form that will be used to record the weights or volumes of waste received (R315-302-2(2)(b) And R315-310-3(1)(f))	Page 18
Schedule for conducting inspections and monitoring, and examples of the forms that will be used to record the results of the inspections and monitoring (R315-302-2(2)(c), R315-302-2(5)(a), and R315-310-3(1)(g))	Page 19 Exhibit 4 & 5
Contingency plans in the event of a fire or explosion (R315-302-2(2)(d))	Page 19
Corrective action programs to be initiated if ground water is contaminated (R315-302-2(2)(e))	Page 20
Contingency plans for other releases, e.g. explosive gases or failure of run-off collection system (R315-302-2(2)(f))	Page 20
Plan to control fugitive dust generated from roads, construction, general operations, and covering the waste (R315-302-2(2)(g))	Page 20
Plan for letter control and collection (R315-302-2(2)(h))	Page 24
Description of maintenance of installed equipment (R315-302-2(2)(i))	Page 20
Procedures for excluding the receipt of prohibited hazardous or PCB containing wastes (R315-302-2(2)(j))	Page 21
Procedures for controlling disease vectors (R315-302-2(2)(k))	Page 21
A plan for alternative waste handling (R315-302-2(2)(l))	Page 22
A general training and safety plan for site operations (R315-302-2(2)(o))	Page 23
Any recycling programs planned at the facility (R315-303-4(6))	Page 23
Any other site specific information pertaining to the plan of operation required by the Executive Secretary (R315-302-2(2)(o))	N/A

Utah Class II Landfill Permit Application Checklist

II Facility Technical Information	
Description of Item	Location In Document
Maps	
Topographic map drawn to the required scale with contours showing the boundaries of the landfill unit, ground water monitoring well locations, gas monitoring points, and the borrow and fill areas (R315-310-4(2)(a)(i))	Exhibit 10
Most recent U.S. Geological Survey topographic map, 7-1/2 minute series, showing the waste facility boundary; the property boundary; surface drainage channels; any existing utilities and structures within one-fourth mile of the site; and the direction of the prevailing winds (R315-310-4(2)(a)(ii))	Exhibit 11
Geohydrological Assessment (R315-310-4(2)(b))	
Local and regional geology and hydrology including faults, unstable slopes and subsidence areas on site (R315-310-4(2)(b)(i))	Exhibit 12 page 6
Evaluation of bedrock and soil types and properties including permeability rates (R315-310-4(2)(b)(ii))	N/A
Depth to ground water (R315-310-4(2)(b)(iii))	Page 7
Quantity, location, and construction of any private or public wells on-site or within 2,000 feet of the facility boundary (R315-310-4(2)(b)(v))	Exhibit 7a
Tabulation of all water rights for ground water and surface water on-site and within 2,000 feet of the facility boundary (R315-310-4(2)(b)(vi))	Exhibit 7b
Identification and description of all surface waters on-site and within one mile of the facility boundary (R315-310-4(2)(b)(vii))	N/A
For an existing facility, identification of impacts upon the ground water and surface water from leachate discharges (R315-310-4(2)(b)(viii))	N/A
Calculation of site water balance (R315-310-4(2)(b)(ix))	Page 8
ENGINEERING REPORT - PLANS, SPECIFICATIONS, AND CALCULATIONS	
Engineering reports required to meet the location standards of R315-302-1 including documentation of any demonstration or exemption made for any location standard (R315-310-4(2)(c)(i))	Page 10
Anticipated facility life and the basis for calculating the facility's life (R315-310-4(2)(c)(ii))	Page 13
Unit design to include liner design, if liner is to be used; cover design; fill methods; and elevation of final cover including plans and drawings signed and sealed by a professional engineer registered in the State of Utah, when required (R315-310-3(1)(b) and R315-310-4(2)(c)(iii))	Page 10
Leachate collection system design and calculations showing system meets the requirements of R315-303-3(2) if a liner is to be used	Page 11
Equipment requirements and availability (R315-310-4(2)(c)(iii))	Page 20
Identification of borrow sources for daily and final cover and for soil liners (R315-310-4(2)(c)(iv))	Page 10

Utah Class II Landfill Permit Application Checklist

II Facility Technical Information	
Description of Item	**Location In Document**
Run-off or leachate collection, treatment, and disposal and documentation to show that any treatment system is being or has been reviewed by the Division of Water Quality (R315-310-4(2)(c)(v) and R315-310-3(1)(i))	Page 11
Landfill gas monitoring and control plan that meets the requirements of Subsection R315-303-3(5) (R315-310-4(2)(c)(vii))	Page 11
Slope stability analysis for static and under the anticipated seismic event for the facility (R315-310-4(2)(b)(i) and R315-302-1(2)(b)(ii))	N/A
Design and location of run-on and run-off control systems (R315-310-4(2)(c)(viii))	Page 21
CLOSURE PLAN (R315-310-3(1)(h))	
Closure schedule (R315-310-4(2)(d)(i))	Page 13
Design of final cover (R315-310-4(2)(c)(iii))	Page 13
Capacity of site in volume and tonnage (R315-310-4(2)(d)(ii))	Page 13
Final inspection by regulatory agencies (R315-310-4(2)(d)(iii))	Page 14
POST-CLOSURE CARE PLAN (R315-310-3(1)(h))	
Site monitoring of landfill gases, ground water, and surface water, if required (R315-310-4(2)(e)(i))	Page 17
Changes to record of title, land use, and zoning restrictions (R315-310-4(2)(e)(ii))	Page 16
Maintenance activities to maintain cover and run-on/run-off control systems (R315-310-4(2)(e)(iii))	Page 16
List the name, address, and telephone number of the person or office to contact about the facility during the post-closure care period (R315-310-4(2)(e)(vi))	Page 2
FINANCIAL ASSURANCE (R315-310-3(1)(j))	
Identification of closure costs including cost calculations (R315-310-4(2)(d)(iv))	Page 25
Identification of post-closure care costs including cost calculations (R315-310-4(2)(e)(iv))	Page 25
Identification of the financial assurance mechanism that meets the requirements of Rule R315-309 and the date that the mechanism will become effective (R315-309-1(1))	Page 25

PERMIT RENEWAL APPLICATION

KANAB SANITARY LANDFILL

JULY, 2003

PREPARED BY: BEEHIVE ENGINEERING

PERMIT RENEWAL APPLICATION FOR THE

KANAB SANITARY LANDFILL

JULY, 2003

PREPARED BY: BEEHIVE ENGINEERING
PANGUITCH, UTAH

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APPLICATION

INTRODUCTION

This report serves as the application for the repermitting of the Kanab Sanitary Landfill located near the Utah / Arizona border south of Kanab. The purpose of the report is to comply with R315-310-8 Administrative Rules of the Utah Solid and Hazardous Waste Committee, Utah Department of Environmental Quality.

The Utah Division of Solid and Hazardous Waste previously issued a Municipal Landfill permit to the Western Kane County Special Service District (hereafter referred to as the District) for operation of the Kanab solid waste disposal facility south of Kanab, Utah. The site is an acceptable location, and the owner desires to renew the facility permit in accordance with existing regulations.

Approximately 227 acres have been acquired by the District and identified for operation of a Class II facility. At some future date, when average annual solid waste volumes exceed 20 tons per day, the facility will be converted to Class I status. The landfill currently accepts waste from Kanab and the District's southern region. It is capable of servicing the area's current and future needs for many years. The site is centrally located in an effort to accommodate regionalization, and local municipalities participate with the District in such activities. The site is also capable servicing national park units and state park units if interagency agreements are reached in the future. In addition, the site is relatively isolated, has sloping topography, and has positive characteristics when considering precipitation, available cover material, and soil permeability. Exhibit 1 is a general vicinity map depicting the area. Exhibits have been extracted from the 1997 permitting documents unless otherwise noted.

RESPONSIBLE PARTIES

The applicant, property owner, and responsible party for site operation is:

Western Kane County Special Service
District #1
28 North Main
Kanab, Utah 84741
Attn: Nyle Willis
Phone: (435) 644-5089

Technical questions and comments regarding the renewal can be directed to:

Brian B. Bremner
P.O. Box 59
Panguitch, Utah 84759

It should be noted the District frequently evaluates cooperative solid waste disposal agreements with other governmental entities within its boundaries. Future agreements and alternate ownership/operation scenarios may require modification of this section of the permit. In addition, the District may contract site operations with private entities. The District will notify the Executive Secretary of any changes in responsible party status at least 30 days prior to their effective date.

GENERAL DESCRIPTION

The Kanab Sanitary landfill is a Class II natural attenuation facility designed to fulfill the current and future solid waste disposal needs of the District. The facility encompasses a total of 227 acres and currently serves Kanab, Church Wells, and the southern portion of Kane County. Annual average waste volumes are less than 20 tons per day, and precipitation is less than 25 inches per year.

No other reasonably practical alternative exists for disposal of the District's solid waste. Hauling distances to East Carbon Development is prohibitive. The John's Valley landfill in Garfield County is not available for the District's use, and operational characteristics make it infeasible to use the Long Valley site.

Adequate capacity exists and subsurface geohydrology is sufficient to permit future expansion to Class I status and acceptance of waste in volumes exceeding 20 tons per day. Modifications to the permit will be made as necessary to accommodate larger volumes. Facility plans are included in other sections of this document; construction specifications are not pertinent, because the facility is already operating.

LEGAL DESCRIPTION

The site is legally described as Lots 1,2,3,4,5 and the northwest 1/4 of the northeast 1/4 Section 11, Township 44 South Range 6 West, Salt Lake Base and Meridian. Exhibit 2 depicts the site's relationship to adjacent sections, townships and ranges. The District owns the land where the Kanab Landfill is located. Exhibit 2b is a copy of the property title for the landfill site.

The facility's main gate will be located on an existing county road 112° 30' 00" longitude and 37° 00' 20" lattitude. Lands south and west of the facility are considered multiple use land and are controlled by state or federal agencies. The closest private land exists north and east of the site in Sections 2 and 12, Township 44 South, Range 6 West.

No formal zoning ordinances exist for the landfill. When located in unincorporated Kane

County, the landfill was zoned in an agricultural area. However the landfill itself had no designation. The location was later annexed into Kanab City and is a grandfathered use. Future policies and ordinances will accommodate the Kanab Sanitary Landfill as they are adopted.

WASTE TYPES/AREA TO BE SERVED

Waste accepted by the Kanab Sanitary Landfill is comprised of nonhazardous municipal solid waste generated within the service area. Waste will be comprised of household waste, commercial waste, nonhazardous sludge, small quantity generator waste, and industrial wastes approved by the permit. Special waste shall be accepted and handled in accordance with Administrative Rule R315-315 and the conditions of this permit.

The service area may consist of all lands within the legal boundaries of the District and other areas the District is willing to serve but is generally limited to the southern portion of the District. The Kanab Sanitary Landfill may accept waste generated outside the service area if an appropriate agreement or memorandum of understanding has been executed. An appropriate agreement will also be sought from governmental entities and solid waste managers within the District boundaries. Exhibit 3 illustrates the Service District's boundaries.

PLAN OF OPERATION

The plan of operation required by Subsection R315-302-2(2) can be found in other portions of this application.

REQUIRED FORMS

The daily record form used to record weights of volumes of waste received required by Subsection R315-302-2(3)(a)(i) is included as Exhibit 4a. The form for recording inspections for hazardous and PCB wastes is included as Exhibit 4b.

INSPECTIONS

The owner or operator will inspect the facility to prevent malfunctions, deterioration, operation errors, and discharges which may result in the release of wastes to the environment or a threat to human health. The owner or operator will conduct these inspections at least once each quarter and will complete the inspection log included as Exhibit 5. The inspection log will be kept for a minimum of 3 years from the date of inspection.

CLOSURE AND POST CLOSURE

The detailed closure and post-closure plans required by Subsection R315-302-3 are included in other sections of this document. Closure operations will be performed on an ongoing basis as cells reach final elevation. Post-closure care will be performed as described below.

WATER QUALITY REVIEW

State regulations allow landfills to be permitted by rule. The Division of Solid and Hazardous Waste is responsible for water quality at landfills. Therefore, additional groundwater discharge permits are not required.

The Kanab Landfill receives an average of less than 20 tons of waste per day and is located in an area that receives less than 25 inches of precipitation annually. In addition, drilling in the area documented in previous applications indicates no groundwater exists within 200 feet of the landfill, and subsurface material provides a barrier for any potential leachate. These characteristics qualify the Kanab Landfill as a rural arid landfill and make the facility eligible for groundwater monitoring exemptions. No groundwater monitoring or leachate collection is proposed for the landfill.

Use of an industrial or domestic waste water treatment facility is not contemplated for the Kanab Sanitary Landfill. Water balance calculations submitted as part of the original application indicate a diminimus quantity of leachate will be developed at the site.

CONTOURING, FINAL COVER AND SEEDING

Closure operations will consist of leveling, contouring, placement of appropriate covers, and seeding as necessary to reduce infiltration and preserve the integrity of the completed areas of the landfill. Areas of the landfill reaching final elevation will be closed within six (6) months. Closure operations will include leveling and contouring using intermediate cover to reduce infiltration and ponding. Excess material may be stripped and utilized in other operations or left in place. After grading operations promoting drainage are complete, earthen material which increases the total cover depth to 2 feet including 6 inches of topsoil will be installed. Geosynthetic clay liners and other compatible covering systems may be used when permeability characteristics are equal to or better than earthen materials.

Upon completion of the covering operations, closed areas will be seeded. The seed mixture shall be developed after consultation with local range specialists and verifying availability of local seed markets. Recently closed sections of the landfill will be evaluated as part of the quarterly inspection process and will be placed on post-closure status.

FINANCIAL ASSURANCE

A detailed financial assurance plan as required by R315-309 is included in other sections of this document. The District has established an escrow account for financial assurance sufficient to assure adequate closure, post-closure care, and corrective action, if required. The account balance is currently in excess of the minimum financial assurance amount of $21, 825.00

GEOHYDROLOGICAL ASSESSMENT

GEOLOGY

The Kanab Landfill is situated in the high desert of southern Utah. The area is characterized by rugged plateaus, arid desert, and the valley cut by Kanab Creek. The landfill is located on the Utah / Arizona border with the surface made up of flat to rolling slopes of alluvial deposits of variable thickness. The elevation of the landfill is approximately 4960 feet above sea level. Two miles west and 200 feet downgradient of the landfill is Kanab Creek.

Site specific geology of the landfill indicates the area predominantly covered by interbedded alluvial material. The surface material is characterized by silts and clays of low permeability. The material is approximately six feet deep and is fairly resistant to infiltration. The surface member is underlain by a thin layer of sands and gravels to a total depth of 12 to 17 feet. This thin layer of coarser material overlays a thick impermeable layers of clay and shale which extend to a minimum depth of 200 feet. No groundwater was encountered during the drilling, but some minor moisture did condense on a 2 foot section of the drill rod (from 15 to 17 feet depth) in the second of two drill holes. A detailed description of exploratory drill logs can be found in other sections of this application.

There are no apparent faults, unstable slopes and subsidence areas within the boundaries of the landfill. It should be noted that significant portions of the site are characterized by rolling slopes of alluvial material. On site investigations demonstrate natural material will stand at slopes flatter than 2:1.

HYDROLOGY

The climate in the area is mainly dry and warm. The seasons are fairly well defined, and there is forty degree difference in normal mean monthly temperatures. The average length of the growing season at Kanab is approximately 171 days. In any given year the length of the growing season may vary as much as 40 days from the average. Normal annual precipitation at Kanab is 13.3 inches. The largest amount of precipitation is during the months of January and August and the least during May and June. Data kept by the weather bureau on wind near the landfill indicate the windiest part of the year is in the spring and the early summer. The prevailing winds are usually dry and blow from the southwest.

ON SITE SOIL PROPERTIES

In order to determine onsite soil properties samples were obtained throughout the drilling depth of two exploratory drill holes located adjacent to and north of the existing active area of the landfill.

Data from the drill holes and topographic information indicate surface soils are thin and range from 12 ft. to 17 ft. in depth. The samples were classified by the driller according to standard industry practices at the time of extraction. Results indicate surface material is comprised various alluvial material ranging in size and permeability. The surface materials are underlain by thick layers of impermeable clay and shale. Exhibits 6a and 6b are drill logs and provide actual data concerning onsite soils.

GROUNDWATER

No groundwater was encountered during the drilling operations. Two drill holes located within active portions of the landfill were drilled to a depth of 200 feet. No wells are located within one mile of the landfill, and information regarding depth to groundwater aquifers, directional flow rate, and water quality data is not available.

It should be noted that some minor moisture condensed on the drill rod in the sand/gravel layer from 15 to 17 feet in the second drill hole. The moisture was so minor that no accumulation occurred, and the driller indicated no groundwater was encountered.

Groundwater quality beneath the landfill site is unknown. The arid climate, local surface material and underlying clay/shale formations eliminate any reasonable probability of contaminating groundwater from the surface. Exploratory wells to determine groundwater quality are an obvious conduit for any contamination and are considered inappropriate for this site.

WELLS AND WATER RIGHTS

Contact was made with the State Engineer's office to determine quantity, location, and construction of any private and public wells within 2,000 feet of the site. No wells were identified within the surveyed area. An expanded search determined that no well exists within one mile of the landfill.

An examination of surface rights in the area was also conducted by the State Engineer's office. No surface rights were found in close proximity to the landfill. Four surface rights were found within one mile of the facility. All of the surface rights are for stock watering purposes and are located east of the site in an area topographically isolated from the landfill. Exhibits 7a and 7b constitute the

documentation provided by the State Engineer. Information is not available regarding background and surface water quality assessments in the area.

SURFACE WATERS

No perennial streams, rivers, or permanent surface waters exist within close proximity of the landfill. The closest perennial surface water is Kanab Creek located approximately 2 miles west of the landfill and having a flow line approximately 200 feet below the final elevation of waste. Other washes in the area are small insignificant drainages that have formed in the native soil. All intermittent washes and surface waters will be prevented from impacting areas of the landfill which have received solid waste for events smaller than the 25-year storm period.

WATER BALANCE

Several water balance calculations have been performed for various landfills in the area and are on file with the Division of Solid and Hazardous Waste. Results at nearby landfills indicate no leachate was generated in the bottom 10 ft of waste during a 50 year evaluation period. White Mesa Landfill's HELP Model simulations indicate nearly 100 years are required for leachate to reach the landfill bottoms when considering worst case scenarios. Actual conditions will result in a lower production of leachate than predicted by previous modeling.

Recent changes in federal regulation and Utah State law exempt small landfills in arid regions from groundwater monitoring requirements. The Kanab Sanitary Landfill will receive less than 20 tons of waste per day, is located in an area that receives less than 25 inches of precipitation per year, and is more than 100 feet from the nearest groundwater aquifer.

POTENTIAL GROUNDWATER CONTAMINATION

As a small, arid facility the Kanab Landfill is exempt from groundwater monitoring requirements. The landfill receives less than 20 tons of waste per day, receives less than 25 inches of precipitation per year and is located more than 100 ft. above existing groundwater aquifers. Based on Utah State regulations these characteristics exempt the facility from groundwater monitoring requirements.

In addition, there is no potential for migration of hazardous constituents from the facility to the groundwater during the active life of the facility and during the post closure period. This conclusion is supported by three separate analysis: 1) onsite geologic and hydrologic conditions, 2) water balance and leachate production modeling, and 3) operational practices which minimize the amount of water that can come in contact with the waste. Each analysis makes its own strong argument for suspending groundwater monitoring requirements.

Onsite geologic and hydrologic conditions demonstrate a diminimus potential for hazardous constituents reaching groundwater resources. Drilling operations indicate an absence of groundwater for a depth of 200 ft. The site is characterized by interbedded layers of alluvial material of low to moderate permeability. These relatively impermeable surface materials are underlain by a dense, impermeable clay/shale formation beginning at depths of 23 to 35 feet. The impermeable shale layers extend to a depth of at least 200 feet and will preclude the downward movement of any leachate and prevent any potential contamination.

In addition to favorable soil conditions and depths to groundwater which minimize the potential for liquid migration, local climatic conditions eliminate the production of significant amounts of leachate. Average annual precipitation is only 13.3 inches per year, and potential evapotranspiration exceeds precipitation by more than 400%. The lack of significant moisture passing beyond the vegetative zone is evidenced by the sparsely grown surface plants which are limited by minimum amounts of moisture.

Water balance and leachate production modeling also demonstrate a diminimus potential for hazardous constituents reaching groundwater resources. HELP model analysis described above indicates several centuries of worst case conditions would be required for leachate to be produced in sufficient quantities to result in the migration of any liquid to the groundwater. Worst case scenarios were developed with numerous safety factors including extended open operation, a 40 year post closure period, use of free draining materials instead of impermeable onsite materials, containment of all precipitation to infiltrate the cover, bare ground conditions during a 10 year open period, and uncompacted cover material. In spite of these considerable efforts to create leachate production, results indicate the potential for hazardous constituents reaching the groundwater does not exist. Actual conditions will result in a greater level of confidence and a lower production of leachate than identified by the model.

Operational practices will also reduce the amount of water that could possibly come in contact with the waste. Surface waters will be diverted by a series of ditches and berms designed to protect landfill cells from run on water for storms considerably greater than the 25 year event. The size and progression of the units will result in cells being brought to final elevation and closed in the minimum amount of time possible, reducing the amount of water entering the waste. Contouring operations will reduce ponding and promote drainage away from active areas; use of alternate daily covers may prevent the infiltration of limited precipitation into the waste. The limited working face will require the removal of any snow from the active area, so incoming waste can be deposited. All of these measures result in the reduction of an extremely limited source of moisture.

Considering onsite geologic and hydrologic conditions, water balance and leachate production modeling, and operational practices which reduce the amount of water contacting the waste, groundwater monitoring and vadose zone monitoring are not justified. In fact installation of monitoring wells may provide a more viable conduit for groundwater contamination. The Executive Secretary is requested to exempt the Kanab Sanitary Landfill from groundwater monitoring requirements in accordance with Subsection R315-303-3.(3)(e) of the Solid Waste Rules.

PRELIMINARY ENGINEERING REPORT

SITING CRITERIA

The Kanab Sanitary Landfill complies with siting criteria currently mandated by regulation and recognized by the State of Utah Solid and Hazardous Waste Committee. Specifically, no airport is located within 10,000 feet of the landfill. The site is free from unstable areas and is not located within a 100-year floodplain or in any wetland. In addition to federal mandated criteria, the site is compatible with existing land uses, long term landfill operation and is in a remote area free from dwellings and other incompatible structures such as churches, schools, hospitals, etc.. Cultural resources within the landfill will be mitigated in accordance with State Historic Preservation Officer requirements.

SOLID WASTE MANAGEMENT COMPLIANCE

The Kane County Solid Waste Management Plan required by Senate Bill 255 identifies the need for landfills capable of long term service in the planning area. The plan further recommends that repermitting the landfill be made a top priority in the coming years. The Kanab Sanitary Landfill is in compliance with that recommendation and with the Solid Waste Management Plan.

LINER DESIGN

Current volumes of solid waste disposed by generators serviced by the Kanab Landfill are well below 20 tons per day, and the facility is eligible for small landfill design exemptions. These exemptions include liner design; no liner is proposed for the landfill at present.

BORROW SOURCES

The Kanab Sanitary Landfill will utilize onsite borrow materials for daily cover, final cover, and soil liners. Current estimates indicate more than 3 million cubic yards of suitable material is available within the landfill limits. Current cell locations utilize excavated on site material and provide ongoing borrow operations.

If, for any reason, existing onsite soils become unsuitable, alternate borrow sources will be obtained and submitted to the Executive Secretary for approval.

LEACHATE COLLECTION, TREATMENT AND DISPOSAL

The Kanab Sanitary Landfill is a natural attenuation facility located in an arid region with favorable soil conditions. Regional water balance calculations indicate a diminimus volume of leachate will be generated at the landfill. Hypothetical HELP Model simulations for an area left open to precipitation for 5 years indicate waste would be at wilting point during several periods of each year. The hypothetic situation also demonstrated an absence of leachate during the 5-year simulation. As a Class II facility with groundwater more than 100 ft. deep, the landfill is exempt from leachate and collection design requirements.

LANDFILL GAS CONTROL AND MONITORING

Due to the arid nature of the climate at the Kanab Sanitary Landfill and the nature of waste accepted at the facility, landfill gas concentrations are not anticipated to reach significant levels. The Executive secretary is requested to waive requirements to monitor landfill gas. Monitoring requirements inside buildings will be met by installing methane detectors in any building on the site.

The waiver is justified because characteristics at the landfill prohibit the generation of landfill gases in amounts that pose a threat to human health or the environment. As described above, the climate at the landfill is extremely arid. Evapotranspiration exceeds precipitation by more than 400%. The largest storm events occur in the form of thunder showers, which result in a significant amount of the moisture running off the site prior to contacting the waste. These climatic conditions, coupled with relatively dry waste and soils which help absorb moisture, eliminate the production of significant amounts of landfill gases.

Should unacceptable levels of landfill gases be detected in buildings, contingency plans described in other areas of this permit will be implemented.

CELL DESIGN AND OPERATION

The Kanab Sanitary Landfill is designed to minimize active areas and to reach final elevation as soon as practical in order to minimize infiltration and leachate generation. The cells are designed to accommodate from two to five years of waste and to expand in an orderly fashion from south to north and from west to east.

Cells are approximately 30 feet in depth, and bottom widths will range from 40 feet to 100 feet. Length of the cells varies with volumes of waste, season of the year, and soil stockpile needs; but approximate 200 feet. Currently cell height is above initial excavations and deposition is in a fill

condition.

Near the close of each working day waste is spread, compacted, and covered with 6 inches of native soil or an alternate daily cover. When daily waste volumes are too small to permit efficient use of landfill space, solid waste may be stockpiled at the working face and covered with an alternate daily cover (a synthetic blanket designed to prevent infiltration).

The 30 foot cell height described earlier is a nominal dimension and does not consider final slopes to promote drainage or additional covering requirements. Cells are anticipated to consist of solid waste compacted in lifts ranging from 7 feet to 12 feet and covered with 6 inches to 12 inches of daily or intermediate cover material. Three lifts may be accommodated in the nominal height.

Minimum equipment requirements at the Kanab Sanitary Landfill are limited to a landfill-type compactor for daily operations and periodic use of additional equipment (dozer, scraper, grader, compactor, etc.) for specific covering, stockpiling, contouring and compacting operations. The facility has already exceeded those requirements. Over time, adequate equipment will be acquired to guarantee the needs of the landfill will continue to be met. Exhibit 8 is an illustration of the proposed cell progression. Exhibit 9 is a conceptual design of a typical cell.

CLOSURE AND POST CLOSURE

Closure operations will be performed on an ongoing basis. When a portion of a cell attains final elevation, and sufficient working area exists to place final cover, closure operations will be initiated. Final cover will consist of 18 inches of material having a permeability of 1×10^{-5} cm/sec or less and 6 inches of native soil. An alternate cover system consisting of a geosynthetic clay mat or an alternate soil cover meeting applicable standards may be substituted for the soil cover. Closure operations will be documented through a Quality Assurance/Control Plan approved by the Executive Secretary. Construction of the final cover will be performed with onsite personnel or may be contracted with private enterprise.

Closed portions of the landfill will be randomly inspected as part of the quarterly reviews performed by the landfill operator. Closed areas will also be inspected as part of the in depth annual inspection. Any deficiencies will be repaired as soon as practical. For those failures which jeopardize the environmental integrity of the facility or permit the uncontrolled infiltration of significant amounts of moisture, corrective measures will be initiated immediately.

No alternate land use for closed sections has been developed to date. Closed cells will remain under the jurisdiction of the landfill manager. If alternate land use plans are developed they will be addressed during the permit renewal process, or a separate permit modification may be submitted.

CLOSURE PLAN

CLOSURE SEASON AND YEAR

Closure operations at the Kanab Sanitary Landfill will be performed on an ongoing basis. Adequate capacity exists at the landfill to continue operation for many years. A final closing date cannot be determined at this time. Ongoing closure operations will generally be performed from April through November, the normal frost free construction period, or as weather permits. No area larger than 2 acres that has achieved final elevation will remain open longer than 6 months.

FINAL COVER, SEEDING, CONTOURING

Closure operations will consist of leveling, contouring, placement of appropriate covers and seeding as necessary to reduce infiltration and preserve the integrity of the completed areas of the landfill. Areas of the landfill reaching final elevation will be closed within 6 months. Closure operations will include leveling and contouring using intermediate cover to reduce infiltration and ponding. Excess material not meeting permeability requirements may be stripped and utilized in other operations or left in place. After grading operations promoting drainage are complete, a geosynthetic clay liner or 18 inches of material with a permeability of $1x10^{-5}$ cm/sec or less will be installed. Alternate designs meeting the performance standard of impermeable material may be used if approved by the Executive Secretary prior to placement. Upon completion of the impermeable cover, 6" of native material similar to existing topsoil will be placed and seeded. The seed mixture shall be developed after consultation with local range specialists and verifying availability of local seed markets. Recently closed sections of the landfill will be evaluated as part of the quarterly inspection process during the first year and then placed on postclosure status.

SITE CAPACITY

Site capacity for the entire Kanab Sanitary Landfill property cannot be accurately estimated. Assuming an initial 40 acre parcel covered by this permit, trench style operation (40 ft. bottom width, 4:1 side slopes, 30 ft. depth), three 8.5 foot lifts of waste with 1.5 foot intermediate cover, and an average density of 900 lbs. per cubic yard, waste volumes can be estimated at 1,056,000 cubic yards or 475,200 tons.

ACTIVE FILL VERSUS CLOSED AREA

The active area of the Kanab Sanitary Landfill is not anticipated to exceed 1.5 acres, with normal operations generally confined to less than 1.0 acre. The closed portion of the landfill will

initially be 0 acres and may increase as much as 2.0 acre per year during the life of the facility. For the five-year life of this permit the closed to active ratio would range from 0 to 6.

CLOSURE TIMING AND NOTIFICATION

Closure activities at the Kanab Sanitary Landfill will be performed on an ongoing basis. The Executive Secretary will be notified of closure progress by reviewing quarterly and annual reports, and by contacting Division of Solid and Hazardous Waste inspectors who have visited the site. Considering the ongoing nature of closure operations and the justification for performing closure operations as a cell reaches final elevation, alternate notification procedures may not be feasible.

In addition to the ongoing notification indicated above, The Executive Secretary will be notified in writing prior to initiation of final cover operations, and the final cover design and the construction quality assurance/quality control (QA/QC) plan will be submitted to the Executive Secretary for review and approval. The QA/QC plan for closure will include tests for permeability and depth. Permeability tests, where required, will be performed at the rate of test per 3000 cubic yards of material and will randomly selected throughout the working area. Permeability tests may include in field or laboratory tests, nuclear density extrapolations, or other industry wide procedures and practices. Depth tests will utilize standard cross section survey methods and will be performed at a rate equal to or greater than tests performed for permeability. Closure as-builts and certification of closure according to the plan identified above will be signed by a registered professional engineer and forwarded to the Executive Secretary within 90 days of completion.

INSPECTIONS

Inspections by regulatory agencies shall be as described in other sections of this permit. The permittee shall allow the Executive Secretary of the Utah Solid and Hazardous Waste Control Board or an authorized representative, including representatives from the local District Health Department, upon representation of credentials, to enter during operating hours and/or inspect at reasonable times any facilities, equipment, practices, or operations regulated or required under this permit.

A record of the inspection may be made by photographic, videotape, electronic or other reasonable means and a copy of any such record shall be provided to the owner and the operator.

CLOSURE COSTS AND MECHANISMS

Closure costs and the recommended mechanism are described in the Financial Assurance Plan contained in other sections of this document. Closure / post closure costs are estimated at $21,825.00. The District has established a dedicated escrow account with the State Treasurer's Office to meet

financial assurance requirements.

POST CLOSURE PLAN

SITE MONITORING

No permanent monitoring devices are proposed for the Kanab Sanitary Landfill. The landfill is exempt from gas monitoring requirements.

No groundwater monitoring wells, lysimeters, vadose zone equipment or other monitors are planned for this facility. Surface waters in closed portions of the landfill will be evaluated as part of the annual inspection. Monitoring will be limited to identifying situations which promote infiltration. Self inspections will be conducted by landfill personnel on a regular basis as part of the quarterly inspection process.

LAND TRANSFERS AND USES

Plats and a statement of fact concerning the location of any disposal site for the landfill will be recorded as part of the record of title with the county recorder no more than 60 days after certification of closure. The District will comply with additional requirements established by the local zoning authority.

INSPECTIONS

Inspections by regulatory agencies shall be as described in other sections of this permit. The permittee shall allow the Executive Secretary of the Utah Solid and Hazardous Waste Control Board or an authorized representative, including representatives from the local District Health Department, upon representation of credentials, to enter during operating hours and/or inspect at reasonable times any closed facilities, equipment, practices, or operations regulated or required under this permit.

A record of the inspection may be made by photographic, videotape, electronic or other reasonable means and a copy of any such record shall be provided to the owner and the operator.

Landfill gas monitoring in buildings will be conducted continually. Concentrations will be measured at each onsite structure with methane detectors. The Executive Secretary may waive the inspection if it can be demonstrated that landfill gas is not being generated. In addition to the landfill gas monitoring, inspections will include evaluation of soil and vegetative covers, identification of infiltration, settlement, and erosion problems and examination of fencing and gates. Any deficiencies with recommended corrective actions and proposed schedules will be identified in the inspection report and submitted to the Executive Secretary for approval.

RUNON AND RUNOFF SYSTEMS

No active or technical devices are proposed to control runon and runoff systems at the Kanab Sanitary Landfill. No surface waters exist in close proximity to the landfill. Native soils, regional hydrology, and topography near at the site prevent the run on of all surface waters resulting from a minimum flow of a 25 year storm into the active area of the landfill. Best management practices will be implemented to minimize infiltration and assure the integrity of the runon/runoff system. Evaluation of the system will be made during the quarterly and annual inspections, and corrective measures, if any, will be implemented. Runon and runoff from events smaller than the 25-year storm will be controlled.

POST CLOSURE COST AND MECHANISM

Post closure costs were estimated using projections for a third party to perform the work and considering the largest area of the disposal facility requiring final cover during the operating period. Estimates considered diminishing costs as the landfill stabilized. Cover stabilization consisted of 27 hours of equipment time spread over the initial four years. Projections for vegetative stabilization included reseeding three years into the post closure period. Inspection / Reporting costs assumed a total of 75 hours with annual totals ranging from two to four hours per year. Post closure costs for a 30 year period for the Kanab Sanitary Landfill are:

Groundwater Monitoring	Not Required
Leachate Monitoring and treatment	Not Required
Gas Control	Included in Other Items
Cover Stabilization - 27 hrs @ $100	$2,700
Vegetative Stabilization -	$1,500
Inspection / Reporting - 75 hrs @ $75	$5,625
Total 30 Year Post Closure Cost	**$9,825**

The District elects to meet financial assurance requirements by establishing a dedicated escrow account with the State Treasurer.

PLAN OF OPERATION

INTRODUCTION

This document constitutes the plan of operation for the Kanab Sanitary Landfill and is intended to comply with guideline R315-302-2(2) of the Utah Division of Solid and Hazardous Waste Administrative Rules. Technical questions and comments may be directed to:

Brian B. Bremner, P.E.
P.O. Box 59
Panguitch, Utah 84759
(435) 676-1119

INTENDED SCHEDULE OF CONSTRUCTION

The Kanab Sanitary Landfill is capable of meeting solid waste disposal needs for the District for many years. The landfill is operating, so the intended construction schedule contemplates continuing operations throughout the active life of the landfill. The current cell is planned for a capacity of approximately 5 years and will be expanded in an ongoing manner as portions of the cell attain final elevation. A schedule listing major activities for the next 5 years of operation is found below. The schedule may be updated as part of the regular permit review process.

August 1, 2003	Submit revised permit from Solid and Hazardous Waste.
Oct. 1, 2003	Obtain revised permit
August, 2003 to August, 2008	Close portions of the landfill reaching final elevation and expand cell to provide additional disposal space.

HANDLING PROCEDURES

During the active life of the landfill material designated for disposal will be brought to the working face where it will be dumped, spread, and compacted. No later than the end of each day's operation, waste will be covered with a minimum of 6 inches of earthen material, or with an alternate daily cover approved by the Executive Secretary. Currently proposed alternate daily covers include a temporary synthetic cover (tarp) with a minimum nominal thickness of 8 mils and a minimum tensile grab strength of 100 lbs. If used, the synthetic cover will be removed at least weekly and waste

will be covered with 6" of earthen material. Covering operations shall minimize the possibility of infiltration. Procedures for the handling of specific wastes including but not limited to dead animals, large appliances, car bodies and asbestos are delineated in Administrative Rules R315-315. Dead animals will be deposited onto the working face near the bottom of the cell with other solid waste and covered with a minimum of 6 inches of earth. Scavenging will not be permitted at the site.

INSPECTIONS AND MONITORING

Inspection and monitoring at the Kanab Sanitary Landfill will be conducted in two components: 1) routine and 2) compliance. Routine inspections will be conducted on incoming material on a random basis to prohibit receipt of unacceptable wastes. In addition, random checks will be made during deposition, spreading, and covering operations to insure protection of the environment and absence of nuisances. Unacceptable waste screening inspection will be made by trained personnel; operational inspection will be made by supervisory landfill personnel.

Compliance inspections will be conducted quarterly to assess the integrity of cover, the condition of side slopes and vegetative cover, and the impacts of erosion. In addition, a detailed annual inspection will be conducted to verify compliance with all permit conditions and state and federal regulations.

FIRE/EXPLOSION CONTINGENCY PLAN

Upon approval of the revised permit by the Executive Secretary, an emergency disposal site capable of storing one month's waste will be developed. In the event of a fire or an explosion that prohibits deposition on incoming waste in the existing cell, materials received at the landfill will be diverted to the alternate storage site and be covered with an alternate daily cover. Upon resolution of the unexpected event, the material will be transported to it's final disposal destination and treated as incoming waste.

Landfill fires and explosions are difficult to control and require different techniques than many incidents handled by local volunteer fire departments. For this reason fires and/or explosions at the Kanab Sanitary Landfill will be managed by landfill personnel. However, local fire departments will respond to provide assistance if requested by the landfill manager. The outline for procedures to follow in case of fire or explosion is:

1. Secure Affected Area
2. Divert Incoming Waste
3. Isolate Fire / Explosion
4. Suppress Incident if Possible

5. Request Additional Assistance if Needed
6. Report & Record Necessary Information

CORRECTIVE ACTION FOR CONTAMINATED GROUND WATER

This section describes corrective actions to be taken by owners and operators to regain compliance with protection levels for the Kanab Sanitary Landfill in the event concentration limits are exceeded in a down gradient well as a result of landfill operations.

No monitoring wells are proposed for the Kanab Landfill. However, if the concentrations of parameters in down gradient wells exceed the concentration limits as a result of landfill operations and as substantiated by confirmatory analyses, owners and operators of the Kanab Sanitary Landfill will implement a corrective action program as outlined in R315-308.

CONTINGENCY PLAN FOR OTHER RELEASES

This section describes corrective actions to be taken by the Kanab Sanitary Landfill to regain compliance with the protection levels of the permit in the event releases are discovered and acceptable concentration limits are exceeded.

When the concentration of parameters exceed acceptable limits as substantiated by confirmatory analyses, owners and operators of the Kanab Sanitary Landfill will implement a corrective action program approved by the Executive Secretary.

EQUIPMENT MAINTENANCE

Active collection systems for leachate and/or explosive gases are not proposed for the Kanab Sanitary Landfill. Therefore, no maintenance will be required for these items. Maintenance of equipment used in day to day operations will be performed by landfill employees or contracted mechanics in accordance with manufacturers recommendations and industry practices.

DUST CONTROL / AIR QUALITY

Fugitive dust is not anticipated to reach unacceptable levels at the Kanab Sanitary Landfill. If fugitive dust exceeds acceptable levels, actions will be implemented to reduce dust. These actions may include watering access roads, developing wind breaks, altering management scenarios, or other appropriate measures.

RUNON/RUNOFF CONTROL

The District will control the runon and runoff resulting from the 25 year event from contacting solid waste and leaving the landfill. This will be accomplished through a series of best management practices. Each cell will be surrounded with a berm style road constructed of excess excavated material. The roads will be approximately 2 feet nominal height and will prevent unanticipated flow of surface waters into the active areas of the facility.

In addition to the interior roads, perimeter access roads may be placed around the cells. The roads will include appropriate ditches and culverts designed to direct surface drainage to desired areas. The few minor intermittent washes which exist onsite will also be redirected away from active areas of the landfill.

EXCLUSION OF HAZARDOUS WASTE

As a small rural landfill, the Kanab facility is in a favorable position regarding exclusion of hazardous waste. During periods when the landfill is not open to the public, waste will be observed as it is removed from the collection vehicle. The waste will be further examined for hazardous materials as it is being spread by the operator and compacted. Appropriate notations regarding hazardous waste will be made on the Daily Record forms. If unacceptable hazardous materials are found, the collection vehicle driver will be notified and the unacceptable substance will be removed from the landfill.

During periods when the landfill is open for public disposal as least one percent of the vehicles (but not less than 1 vehicle per week) and other suspicious loads will be directed to dispose of their material near the working face. The waste generator will be detained while the load is inspected; if hazardous substances are encountered they will be reloaded, and appropriate authorities will be contacted. Considering population served, waste volumes generated, and complexity of the solid waste stream these measures are considered to be adequate.

A section documenting the results of the formal inspections outlined above has been included as part of the daily record forms (see Exhibit 4b). Including hazardous/PCB waste records on the daily record forms will allow landfill managers to incorporate inspections into their daily routine and will permit regulators to review inspection patterns efficiently while examining waste volumes.

DISEASE VECTOR CONTROL

The primary method for disease vector control at the Kanab Sanitary Landfill will be providing appropriate cover at the close of each day's operation. The cover will consist of a 6 inch minimum layer of earthen material or an alternate daily cover.

Rodents and other vermin will not be permitted to burrow in the active area of the landfill; and trapping or extinction methods will be implemented to protect the integrity of the disease vector control program.

ALTERNATIVE DISPOSAL

Alternative waste handling procedures for periods when the landfill is not in operation will be similar to procedures for fires and explosions. Waste will be deposited in the emergency disposal site and covered with an alternate daily cover. Procedures will continue in this manner until operations at the landfill can return to normal.

In the event of equipment breakdown that cannot be repaired in a reasonable time frame, equipment will be borrowed from contributing entities or leased from local distributors.

CLOSURE/POST CLOSURE

Closure of active portions of the Kanab Sanitary Landfill contemplates controlling, minimizing, and eliminating threats to human health and the environment from post closure escape of solid waste constituents, contaminated runoff, or waste composition products to the ground, groundwater, surface water, and the atmosphere. When an area of the landfill exceeding 3,650 square yards reaches final elevation it will be covered within 60 days with 12 inches of intermediate cover and graded to promote drainage. The surface shall be free from ponding and shall minimize infiltration. Not more than 6 months after completion of the intermediate cover, the area will be covered with a minimum of 18 inches of material having a hydraulic conductivity of less than 1×10^{-5} cm/sec. The impermeable barrier will be covered with 6 inches of native soil or 6 inches of material capable of supporting vegetative growth. The District may elect to use geosynthetic clay liners or other alternate cover systems if it can be demonstrated that hydraulic conductivity requirements listed above can be met.

Post closure care of inactive sections of the landfill will consist of maintaining the integrity of the final and vegetative covers. Any areas subject to erosion will also be corrected; and appropriate measures will be implemented to identify and eliminate the source. Groundwater monitoring, leachate collection, and gas collection are not proposed for the Kanab Sanitary Landfill. Therefore, closure and post closure activities associated with these functions will not be performed.

FINANCIAL ASSURANCE

A financial assurance plan has been developed for the Kanab Sanitary Landfill and is contained in other sections of this document. The plan consists of contributing to a dedicated escrow account with the State Treasurer, so sufficient funding is available for the closure and post closure

care of the largest area of the landfill that is active at any time. Cost estimates were developed considering a third party performing the work.

TRAINING AND SAFETY PLAN

Currently two District employees involved with the Kanab Sanitary Landfill have participated in the Manager of Landfill Operations Training Course and the Waste Screening Training Course provided by the Solid Waste Association of North America (SWANA). Limited training and educational experience exists for operators of rural landfills; however, employees will be encouraged to attend appropriate seminars and training as time and budgets permit. All landfill employees have been provided with timely and sufficient training to operate the landfill within regulatory requirements. New landfill employees will also be provided with timely and sufficient training to operate the landfill within regulatory requirements. Training opportunities include access to SWANA training materials, on site training from certified managers, random training from landfill owners, and training from state regulatory staff during on site inspections.

Safety procedures will conform to OSHA guidelines; and personnel will be encouraged to participate in additional landfill management, waste screening, safety, and first aid workshops.

RECYCLING

No viable recycling markets currently exist for solid waste disposal at the Kanab Sanitary Landfill. In an effort to promote recycling some compostable material may be diverted from areas designated for Class IV operation. However, no formal recycling program is anticipated for this facility.

ACCESS CONTROL & ONSITE PERSONNEL

Fencing has ben placed around the active cell and any closed areas with a lockable gate provided at the main entrance of the landfill. The fence and gate eliminate the possibility of unauthorized access.

In addition, landfill personnel are onsite during all hours the facility is open to the public. Contracted collection vehicles may enter the landfill when the facility is not open to the public; however, waste will not be accepted from the public during these periods. The existing schedule is functioning adequately, and the District intends to revise the scheduled operation of the landfill as the need arises and solid waste volumes dictate.

LITTER CONTROL

Litter is controlled through use of best management practices. Active areas and working faces are limited; waste is covered shortly after deposition; and blowing trash is confined as much as practical. Any litter at the perimeter of the landfill will be picked up by hand.

FINANCIAL ASSURANCE PLAN

INTRODUCTION

This section of the permit describes compliance with Subsection R315-309, Financial Assurance of the Administrative Rules for Solid Waste Permitting and Management. Cost estimates consider the most expensive option during the period and are based on a third party performing closure and post closure care.

MECHANISMS

The mechanism proposed for use at the Kanab Sanitary Landfill is establishing a dedicated escrow account with the State Treasurer. Funds in excess of the estimate listed below may be used for capital improvements, to offset rate increases, operational expenses and other items deemed necessary by landfill managers only after requirements for closure and post closure are complete. The District may alter the mechanism to include the government test, insurance, surety bonds, trust funds, or other options as they become feasible.

SCHEDULE OF PAYMENTS

The Western Kane County Special Service District has made payments to a dedicated escrow account with the State Treasurer's office to insure the availability of sufficient funds for closure and post closure care. The fund balance exceeds the minimum $21,825.00 minimum balance.

COST ESTIMATE

Cost estimates were developed considering the largest area of the disposal facility requiring final cover during the operating period and using projections for a third party to perform the work. A cost estimate detailing major closure and post closure components is included below. The Executive Secretary shall be identified as a required signatory on all withdrawals, and transactions affecting the integrity of the account shall be submitted to the Executive Secretary for approval.

Closure Costs

Final Cover	3500 cu. yds. @ $2.0	$ 7,000
Final Grading	2 acres @ $500.00	1,000

Topsoil	1600 cu. yds. @ $1.50	2,000
Revegetation	2 acres @ $1000.00	2,000
Total Closure Costs		**$12,000**

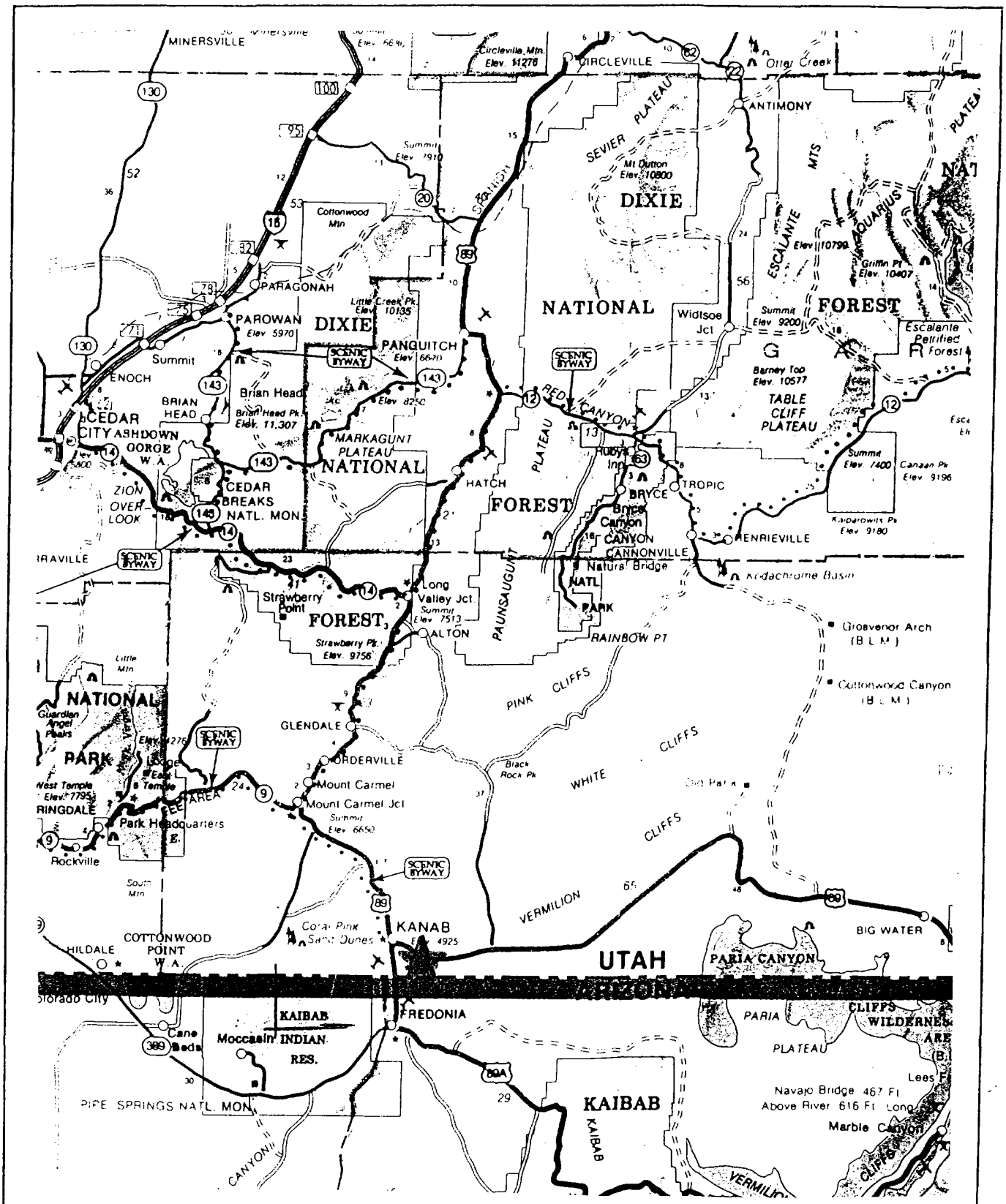
30 Year Post Closure Costs

Groundwater Monitoring	Not Required
Leachate Monitoring and treatment	Not Required
Gas Control	Included in Other Items
Cover Stabilization - 27 hrs @ $100	$2,700
Vegetative Stabilization -	$1,500
Inspection / Reporting - 75 hrs @ $75	$5,625
Total 30 Year Post Closure Cost	**$9,825**

Closure Cost	$12,000.00
Post Closure Cost	$ 9,825.00
TOTAL ASSURANCE REQUIRED	**$21,825.00**

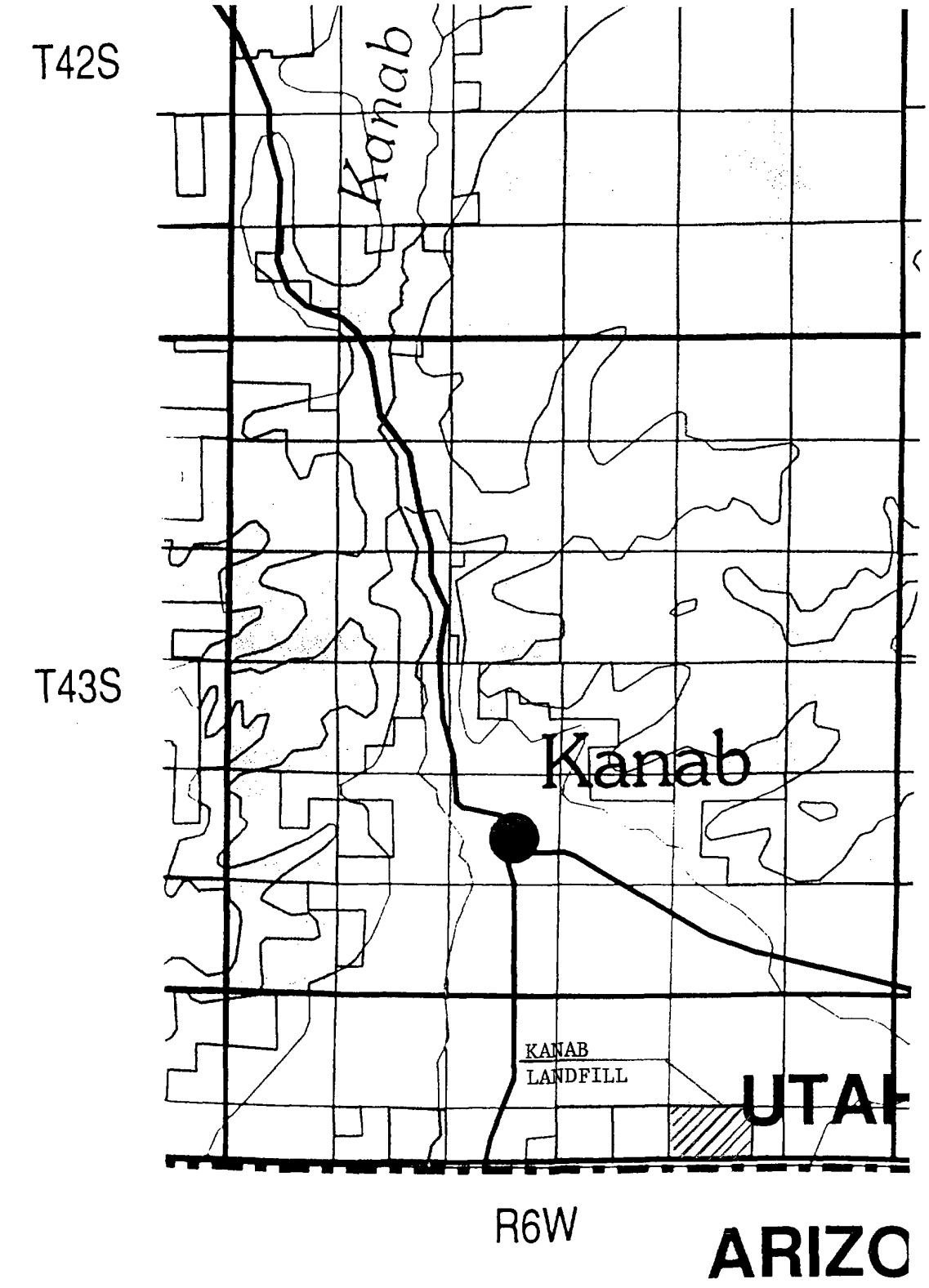
EXHIBITS

Exhibit #1:	General Vicinity Map
Exhibit #2a	Project Location Map
Exhibit #2b	Property Deed
Exhibit #3:	Service District Boundaries
Exhibit #4a-4b:	Daily Record Form
Exhibit #5:	Quarterly Inspection Log
Exhibit #6a-6b:	Onsite Soil Data
Exhibit #7a-7b:	Well and Water Right Documentation
Exhibit #8:	Proposed Cell Progression
Exhibit #9	Conceptual Cell Design
Exhibit #10:	Topographic Map
Exhibit #11	USGS Topographic Map
Exhibit # 12	Geologic Map



KANAB SANITARY LANDFILL

Exhibit 1. General Vicinity Map



KANAB SANITARY LANDFILL

Exhibit 2a Project Location Map

Form 1860-9
(January 1988)

The United States of America

To all to whom these presents shall come, Greeting:

Serial: Utah 46835

WHEREAS,

Western Kane County Special Service District #1

is entitled to a land patent pursuant to the Recreation and Public Purposes Act of June 14, 1926 (44 Stat. 741), as amended and supplemented (43 U.S.C. 869; et. seq.), for the following described land:

Salt Lake Meridian, Utah

T. 44 S., R. 6 W.,
sec. 11, lots 1 thru 5, inclusive, NW¼NE¼.

containing 227.790 acres

NOW KNOW YE, that the UNITED STATES OF AMERICA, in consideration of the premises, and in conformity with said Act of Congress, HAS GIVEN AND GRANTED, and by these presents DOES GIVE AND GRANT unto the said Western Kane County Special Service District #1, the land above described for use as a solid waste sanitary landfill: TO HAVE AND TO HOLD the same, together with all rights, privileges, immunities, and appurtenances, of whatsoever nature, thereunto belonging, unto the same Western Kane County Special Service District #1, forever; and

EXCEPTING AND RESERVING TO THE UNITED STATES:

1. A right-of-way thereon for ditches or canals constructed by the authority of the United States. Act of August 30, 1890 (43 U.S.C. 945); and

2. All mineral deposits in the lands so patented, and the right of the United States, or persons authorized by the United States, to prospect for, mine, and remove such deposits from the same under applicable laws and regulations as the Secretary of the Interior may prescribe; and

ENTRY NO. 78688 RECORDED AT REQUEST OF Western Kane Co. S.S.D. FEES —
DATE Feb. 24 1994 AT 11:30 a.m. YJ CARUSO KANE COUNTY RECORDER
BY DEPUTY — BOOK 0133 PAGE 402-403

Patent Number 43-94-0008

Form 1860-10
(April 1988)

Serial: Utah 46835

The Western Kane County Special Service District #1, its successors or assigns, assumes all liability for and shall defend, indemnify, and save harmless the United States and its officers, agents, representatives, and employees, from all claims, loss, damage, actions, causes of action, expense, and liability (hereinafter referred to in this clause as claims) resulting from, brought for, or on account of, any personal injury, threat of personal injury, or property damage received or sustained by any person or persons (including the patentee's employees) or property growing out of, occurring, or attributable directly or indirectly, to the disposal of solid waste on, or the release of hazardous substances from the land described above, regardless of whether such claims shall be attributable to: (1) the concurrent, contributory, or partial fault, failure, or negligence of the United States, or (2) the sole fault, failure, or negligence of the United States.

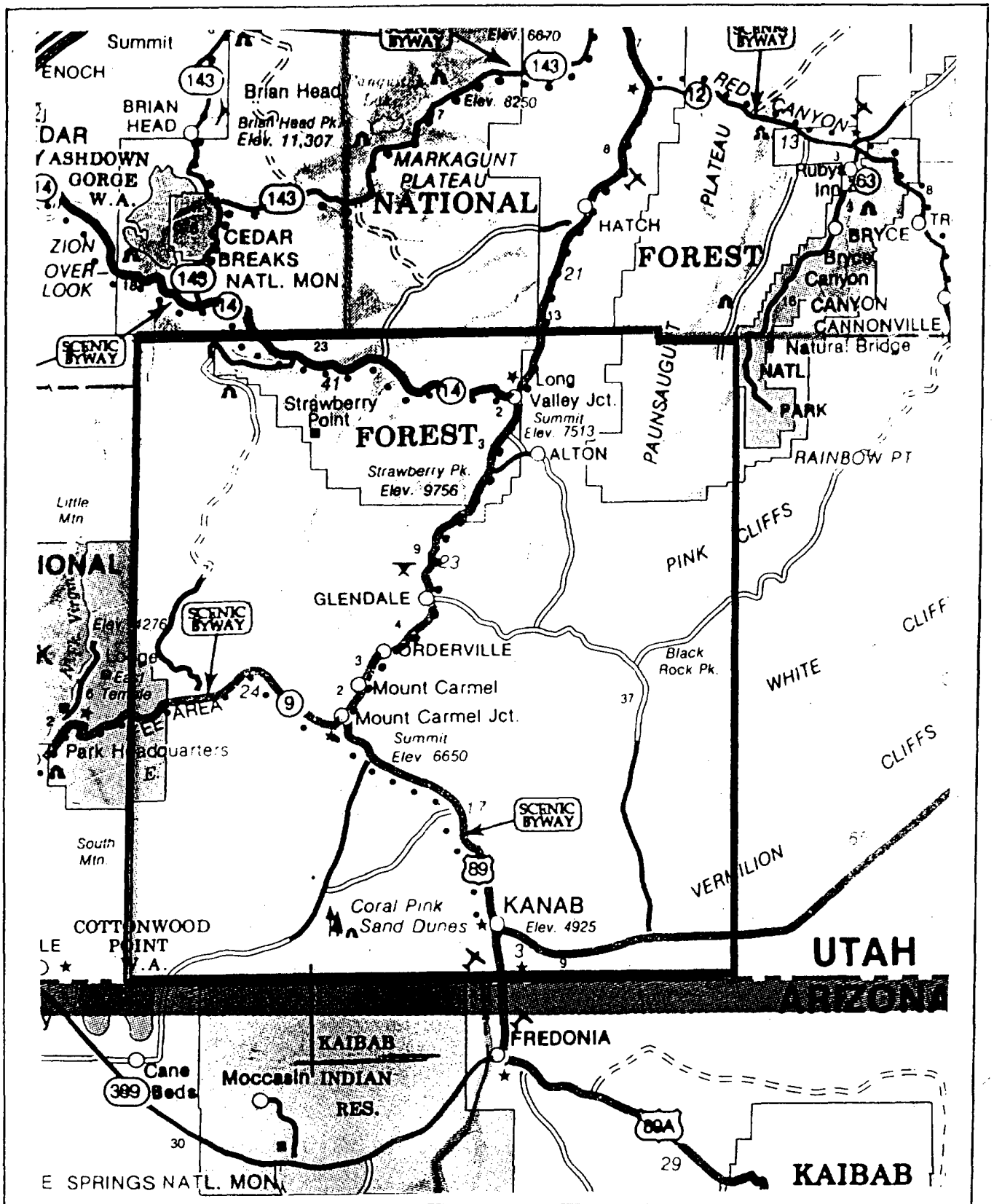
The above described land has been used for solid waste disposal. Solid waste commonly includes small quantities of commercial hazardous and household hazardous waste as determined in the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901), and defined in 40 CFR 261.4 and 261.5. Although there is no indication these materials pose any significant risk to human health or the environment, future land uses should be limited to those which do not penetrate the liner or final cover of the landfill unless excavation is conducted subject to applicable State and Federal requirements.

IN TESTIMONY WHEREOF, the undersigned authorized officer of the Bureau of Land Management, in accordance with the provisions of the Act of June 17, 1948 (62 Stat. 476), has, in the name of the United States, caused these letters to be made Patent, and the Seal of the Bureau to be hereunto affixed.

GIVEN under my hand, in Salt Lake City, Utah
the tenth day of January
in the year of our Lord one thousand nine hundred and
ninety-four and of the Independence of the
United States the two hundred and eighteenth

By Ted D. Stephenson
Chief, Branch of Lands and Minerals, Operations

Patent Number 43-94-0008



KANAB SANITARY LANDFILL

Exhibit 3. Service District Boundaries

KANAB SANITARY LANDFILL
Weight, Volume, and Vehicle Record

Date: _____ Day of Week: _____ Page ___ of ___

Time	Vehicle No.	Est. Volume Cu. Yds.	Est. Weight Tons	Origin	Type of Waste

Signature _____ Date _____

KANAB SANITARY LANDFILL

Exhibit 4a. Daily Record Form

HAZARDOUS WASTE / PCB INSPECTION RECORD

Date: _____ Time: _____ Vehicle No. _____

Random Selection: Yes / No Suspicious Load: Yes / No Other: _____

Vehicle Owner: _____ _____
Name Address

_____ _____
City, State Phone

Waste Origin: _____

Waste Types: _____

Describe any hazardous or PCB wastes encountered: _____

_____

Action Taken: _____

_____

_____

Comments: _____

_____

_____

_____

_____

_____

If hazardous waste or PCB waste is encountered, contact the Division of Solid and Hazardous Waste at (801) 538-6170

Signature _____ Date _____

KANAB SANITARY LANDFILL

Exhibit 4b. Hazardous/PCB Waste Record Form

UNIZICKER & WELLS DRILLING

WELL DATA FORM

OWNER NAME Kanab Landfill Hole # 1 of 2 Page _____ of _____

DEPTH (feet) FROM	TO	WATER	PERMEABLE high	PERMEABLE low	UNCONSOLIDATED CLAY	SILT	SAND	GRAVEL	COBBLES	BOULDER	OTHER	CONSOLIDATED ROCK TYPE	COLOR	DESCRIPTIONS AND REMARKS (include comments on *water quality* if known.)
0	6			X	X									
6	12			X	X		X							
12	16			X	X									
16	23				X		X							
23	28				X									
28	33					X	X	X						
33	35				X		X							
35	55										X	Shale	grey	
55	60										X	Shale	pink	
60	200										X	Shale	Red	
														Total depth 200'
														Test diameter 5"
														No water encountered

KANAB SANITARY LANDFILL

Exhibit 6a. Onsite Soil Data

UNIZICKER & WELLS DRILLING

WELL DATA FORM

OWNER NAME Kanab Landfill Hole # 2 of 2 Page ____ of ____

DEPTH (feet) FROM	TO	WATER	PERMEABLE high	PERMEABLE low	UNCONSOLIDATED CLAY	SILT	SAND	GRAVEL	COBBLES	BOULDER	OTHER	CONSOLIDATED ROCK TYPE	COLOR	DESCRIPTIONS AND REMARKS (include comments on *water quality* if known.)
0	5			X	X									
5	6			X		X	X							
6	15			X	X	X								
15	17	X		X		X	X							
17	21			X	X							v	yellow	
21	23			X	X								Red	
23	200			X						X		Shale	Red	

Total depth 200'

Test diameter 5"

No water Encountered

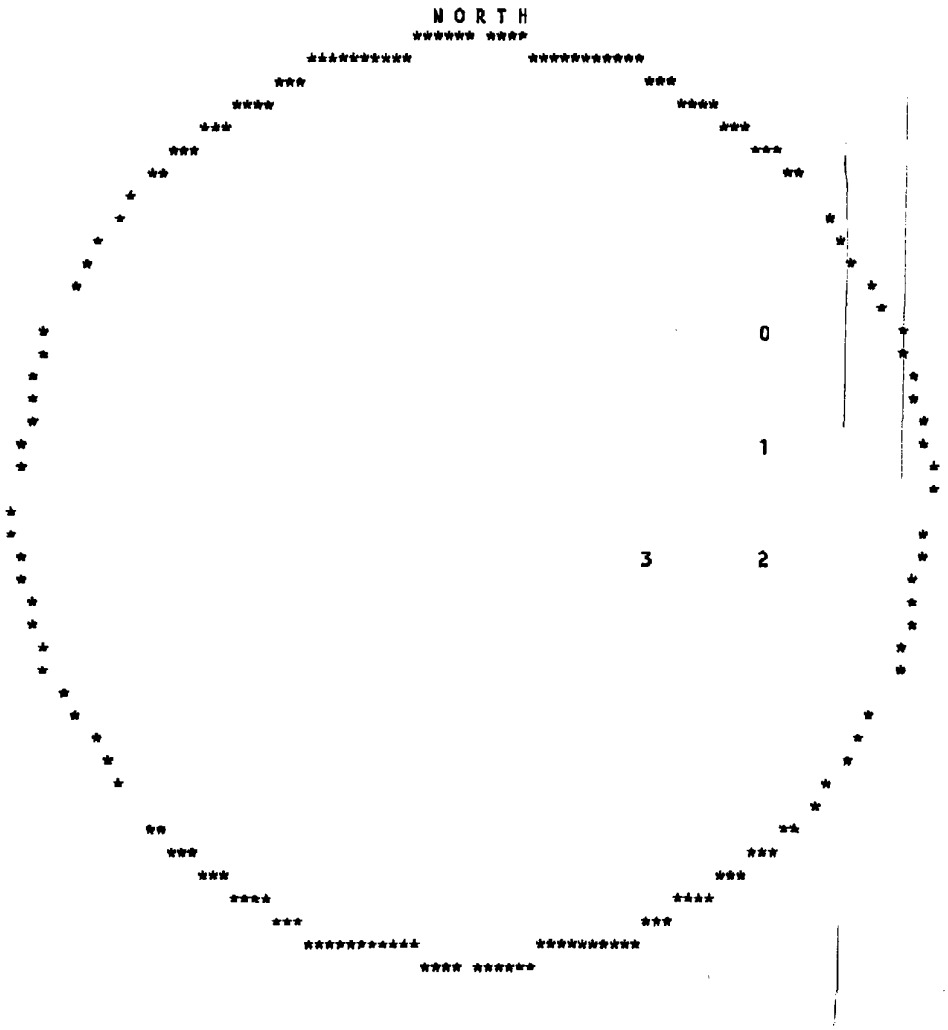
KANAB SANITARY LANDFILL

Exhibit 6b. Onsite Soil Data

UTAH DIVISION OF WATER RIGHTS
WATER RIGHT POINT OF DIVERSION PLOT CREATED THU, JAN 16, 1997, 3:56 PM
PLOT SHOWS LOCATION OF 4 POINTS OF DIVERSION

PLOT OF AN AREA WITH A RADIUS OF 5280 FEET FROM A POINT
S 1320 FEET, W 1320 FEET OF THE NE CORNER,
SECTION 11 TOWNSHIP 44S RANGE 6W SL BASE AND MERIDIAN

PLOT SCALE IS APPROXIMATELY 1 INCH = 2000 FEET



KANAB SANITARY LANDFILL

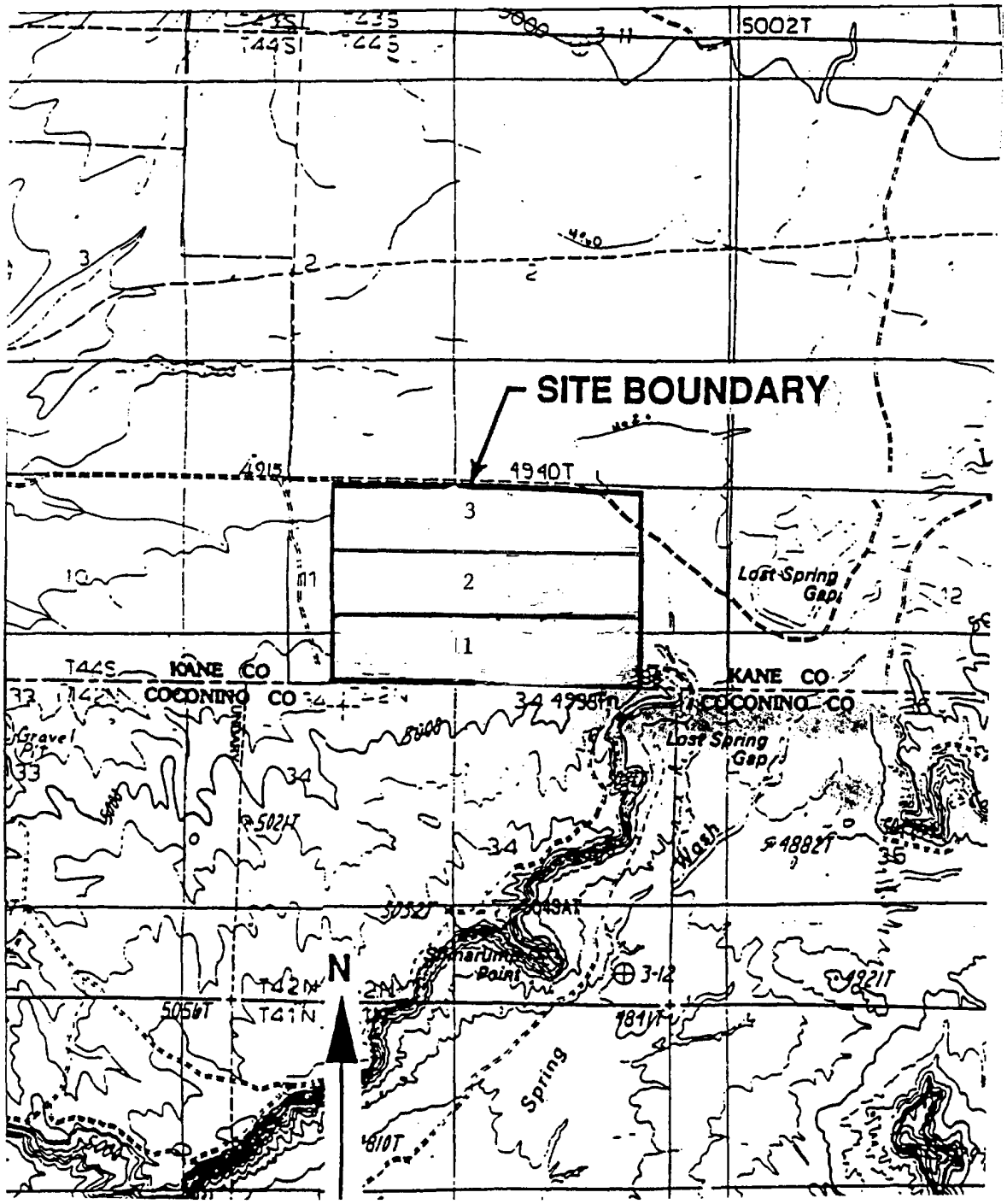
Exhibit 7a. Well and Water Right Documentation

UTAH DIVISION OF WATER RIGHTS
NWPLAT POINT OF DIVERSION LOCATION PROGRAM

MAP CHAR	WATER RIGHT	QUANTITY CFS	QUANTITY AND/OR AC-FT	SOURCE DESCRIPTION or WELL INFO DIAMETER	DEPTH	YEAR LOG	NORTH	EAST	POINT OF DIVERSION DESCRIPTION CNR SEC	TWN	RNG	B&M	U N	A P	P E	T E	S U	U G	P R	R E
0	85 620	.0000	.00	Lost Spring Wash															X	X	X
	WATER USE(S): STOCKWATERING																		PRIORITY DATE: 00/00/1864		
	Chamberlain, Hoyt and Katherine				3718 Olive Highway				Oroville			CA 95965									
1	85 140	.0000	.00	Lost Spring Wash															X	X	X
	WATER USE(S): STOCKWATERING																		PRIORITY DATE: 00/00/1864		
	Noel, Michael E. and Sherry M.				P.O. Box 627				Kanab			UT 84741									
2	85 140	.0000	.00	Lost Spring Wash															X	X	X
	WATER USE(S): STOCKWATERING																		PRIORITY DATE: 00/00/1864		
	Noel, Michael E. and Sherry M.				P.O. Box 627				Kanab			UT 84741									
3	85 141	.0000	.00	Unnamed trib. to Lost Spring W															X	X	X
	WATER USE(S):																		PRIORITY DATE: 00/00/1864		
	Noel, Michael E. and Sherry M.				P.O. Box 627				Kanab			UT 84741									

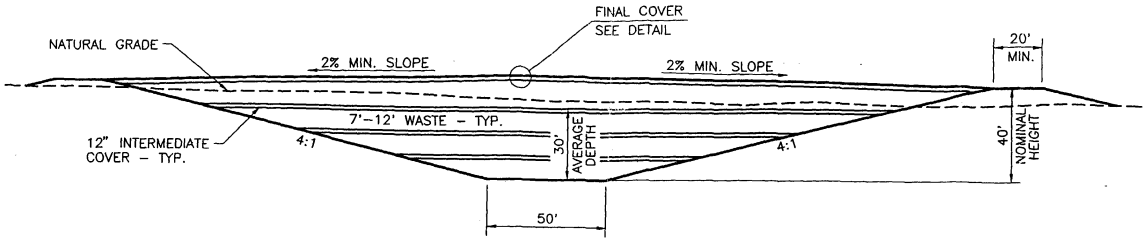
KANAB SANITARY LANDFILL

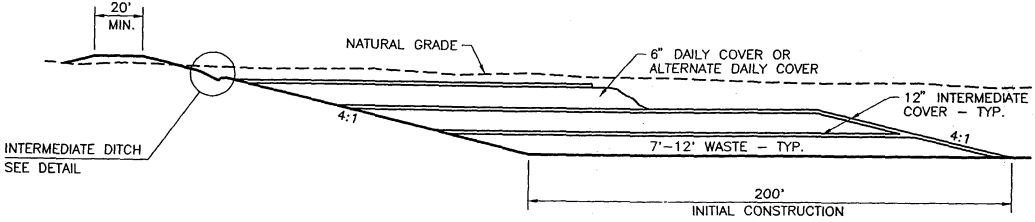
Exhibit 7b. Well and Water Right Documentation



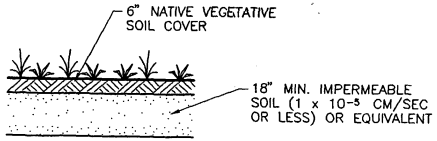
KANAB SANITARY LANDFILL

Exhibit 8. Proposed Cell Progression

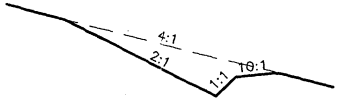




REGISTERED PROFESSIONAL ENGINEER
BRIAN B. BREMNER
No. [illegible]
STATE



FINAL COVER DETAIL



INTERMEDIATE DITCH DETAIL

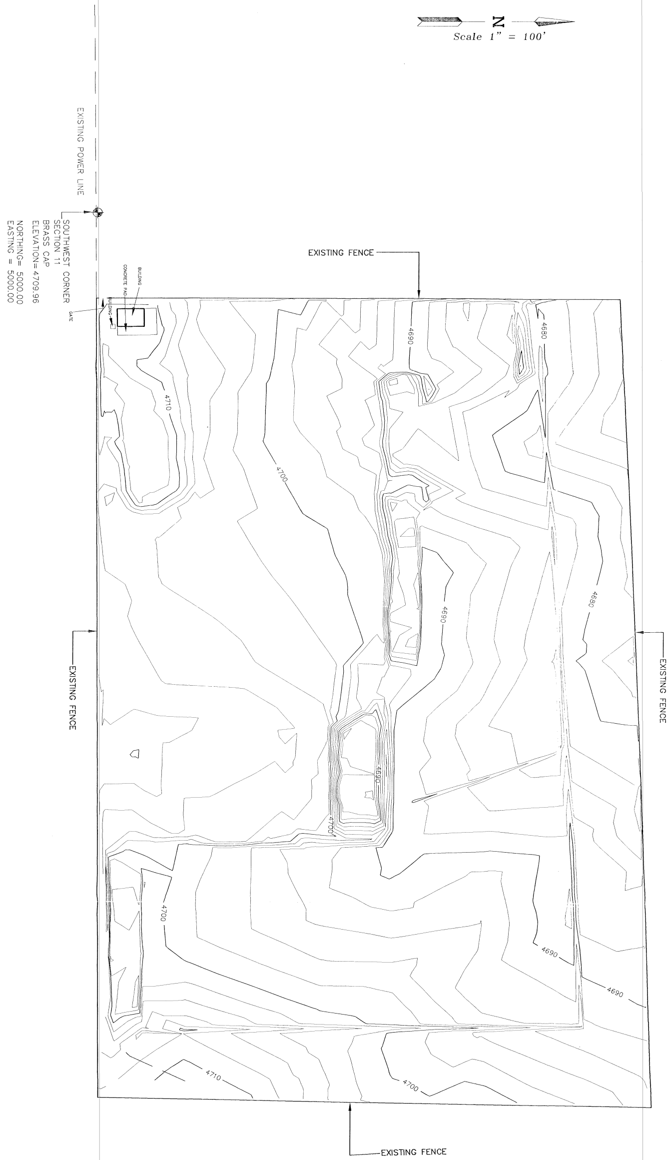
NOTES:

1. ALL SIDE SLOPES 4:1 OR FLATTER
2. INITIAL CELL BOTTOM DIMENSIONS 50' x 200'
3. STOCKPILE SUITABLE MATERIAL FOR FINAL COVER DURING EXCAVATION
4. STOCKPILE TOP 6" OF NATIVE MATERIAL FOR LATER TOPSOIL USE

KANAB SANITARY LANDFILL CONCEPTUAL DESIGN EXHIBIT 9	DESIGNED BB	CHECKED	DRAWN CJC
	DATE		DRAWING NO. ...
	SCALE NONE		SHEET NO. 1 OF 1

FILE=BREMNEY PLOT=1:40


A
Landfill



JOB #	065-01
NAME	SPW
DATE	APRIL 25, 1997
SCALE	1" = 100'
PAGE	1

TITLE

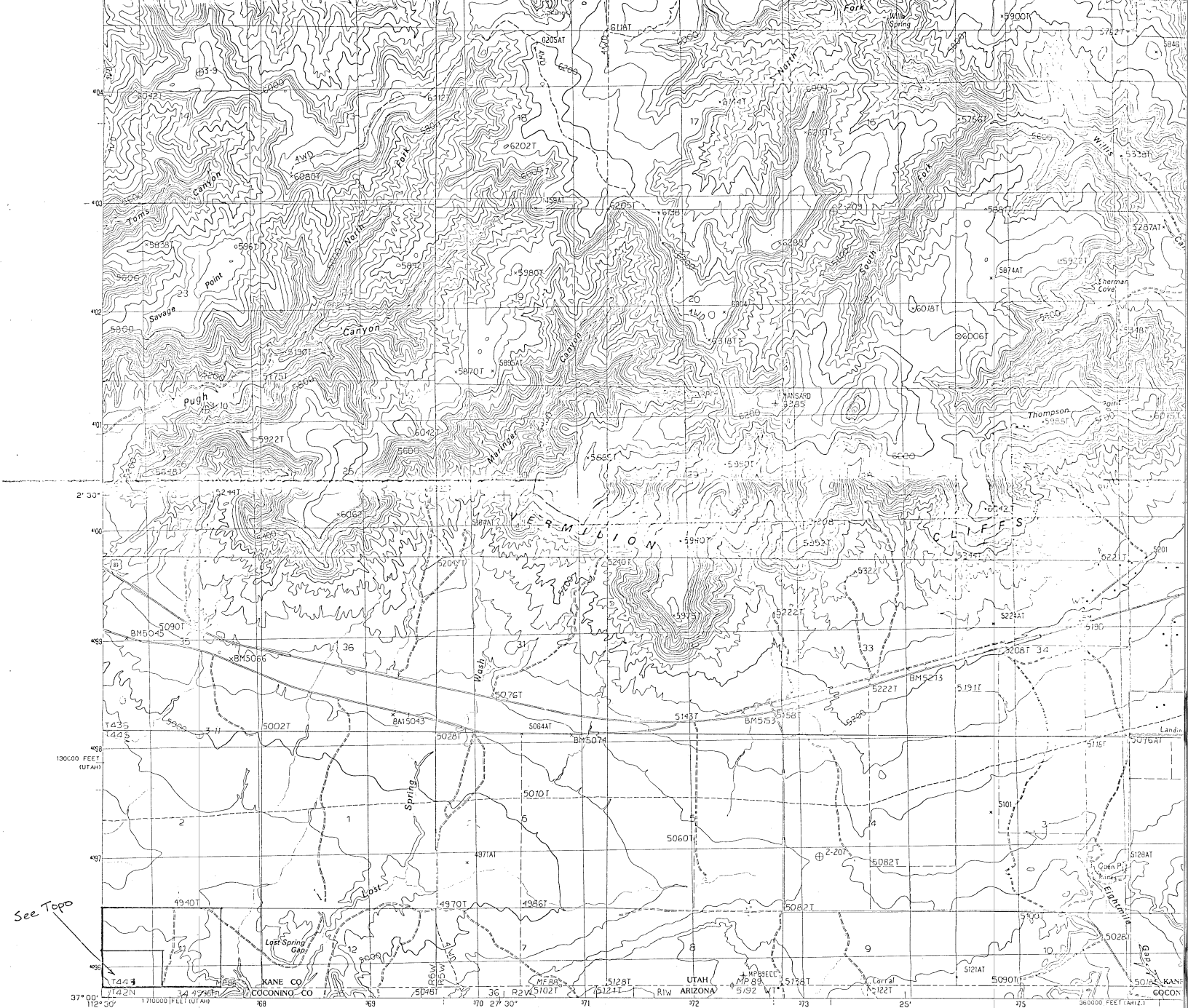
KANAB LANDFILL

PROJECT

AS–BUILT TOPO
BEEHIVE ENGINEERING

ALPHA
ENGINEERING COMPANY
148 E. TABERNACLE, ST. GEORGE, UT. 84770
Telephone: (801) 628-6500

REVISION	DATE	BY	APPROVED



PRODUCED BY THE UNITED STATES GEOLOGICAL SURVEY
CONTROL BY ..... USGS, NOS/NOAA
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1983
FIELD CHECKED ..... 1985 MAP EDITED 1987
PROJECTION ..... LAMBERT CONFORMAL CONIC
GRID: 1000-METER UNIVERSAL TRANSVERSE MERCATOR ..... ZONE 12
10,000-FOOT STATE GRID TICKS ..... UTAH, SOUTH ZONE
ARIZONA, CENTRAL ZONE
UTM GRID DECLINATION ..... 0°52' WEST
1987 MAGNETIC NORTH DECLINATION ..... 13°30' EAST
VERTICAL DATUM ..... NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM ..... 1927 NORTH AMERICAN DATUM

To place on the predicted North American Datum of 1983, move the projection lines as shown by dashed corner ticks (6 meters north and 67 meters east)
There may be private inholdings within the boundaries of any Federal and State Reservations shown on this map
Where omitted, land lines have not been established
No distinction made between houses, barns, and other buildings
All marginal data and lettering generated and positioned by automated type placement procedures

PROVISIONAL MAP
Produced from original manuscript drawings. Information shown as of date of photography. 1

Wind 10°

SCALE 1:24 000

1 5 0 1 MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10 000
FEET
1 5 0 2 KILOMETERS
1000 0 METERS 1000 2000

CONTOUR INTERVAL 40 FEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225
OR RESTON, VIRGINIA 22092

UTAH
QUADRANGLE LOCATION

ROAD
Improved Road . . . .
Unimproved Road . . .
Trail . . . . . .
Interstate Route

1	2	3	1 White Tower 2 Cutler Point 3 Blue Point
4		5	4 Kanab 5 Johnson Lake
6	7	8	6 Fredonia 7 Shinarump Point 8 Moquino Flat

ADJOINING 7.5' QUADRANGLE NAMES

THOMPSON POI
PROVISION.
1711